Exercise - I (Conceptual Questions) Build Up Your Understanding

INTRODUCTION TO EUKARYOTIC CELL (CELL WALL, CELL MEMBRANE)

1. Cell membrane is composed of :-
(1) Proteins and cellulose
(2) Proteins and phospholipids
(3) Proteins and carbohydrates
(4) Proteins, phospholipids and some carbohydrates

2. Carbohydrates are present in the plasma membrane in the form of :–
(1) Hemicellulose (2) Cellulose
(3) Starch (4) Glycoprotein

3. Carbohydrates which are present in the cell membrane take part in :–
(1) Transport of substance
(2) Cell recognition
(3) Attachment to microfilament
(4) Attachment to microtubules

4. Plasma membrane is fluid structure due to presence of :–
(1) Carbohydrates (2) Lipid
(3) Glycoprotein (4) Polysaccharide

5. The chemical substance abundantly present in middle lamella is :–
(1) Cutin (2) Chitin
(3) Lignin (4) Pectin

6. Which of the following is capable of growth and gradually diminishes as the cell matures?
(1) Primary cell wall
(2) Secondary cell wall
(3) Middle lamella
(4) Cell membrane

7. The fluid nature of the membrane is helpful in function of :-
(1) Cell growth (2) Cell division
(3) Endocytosis (4) All the above

8. Plasma membrane is :–
(1) Selectively permeable
(2) Permeable
(3) Impermeable
(4) Semipermeable

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9. The Singer and Nicolson's Model of Plasma membrane differs from the Robertson's model in the-
(1) Number of lipid layers
(2) Arrangement of proteins
(3) Arrangement of lipid layers
(4) Absence of proteins

10. Ingestion of large molecules by a cell is called -
(1) Diffusion (2) Osmosis
(3) Exocytosis (4) Endocytosis

11. In fluid mosaic model of plasma membrane:-
(1) Upper layer is non-polar and hydrophilic
(2) Polar layer is hydrophobic
(3) Phospholipids form a bimolecular layer in middle part
(4) Proteins form a middle layer

12. The main lipid components of the plant cell membrane are :-
(1) Phosphodiester (2) Glycocalyx
(3) Peptidoglycan (4) Phosphoglyceride

EUKARYOTIC CELL (ENDOMEMBRANE SYSTEM)

13. Rough E.R. mainly responsible for:-
(1) Protein synthesis
(2) Cell wall formation
(3) Lipid synthesis
(4) Cholesterol synthesis

14. Mitochondrial DNA is :-
(1) Naked (2) Circular
(3) Double stranded (4) All the above

15. Golgi body originates from :-
(1) E. R. (2) Mitochondria
(3) Nucleus (4) Proplastid

16. Which cell organelle synthesises steroids ?
(1) E. R. (2) Golgi body
(3) Peroxisomes (4) Lysosomes

17. Which of the following provides mechanical support and shape to the cell ?
(1) Golgi complex (2) Centrioles
(3) Lysosomes (4) E.R.

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18. Hydrolytic enzymes are abundantly found in which cell organelles ?
(1) Ribosome
(2) Lysosome
(3) Golgi body
(4) Endoplasmic reticulum

19. The smooth E.R. is mainly made up of :–
(1) Cisternae (2) Tubules
(3) Vesicle (4) All the above

20. Which of the following is known as ***"System of membranes"*** ?
(1) Lysosome (2) E.R.
(3) Mitochondria (4) Chloroplast

21. Ribophorins occur on the surface of :–
(1) Rough E.R. (2) Smooth E.R.
(3) Golgi body (4) Lysosome

22. At which pH lysosomal enzymes become active ?
(1) pH – 5 (2) pH – 7
(3) pH – 8 (4) pH – 10

23. Main function of golgi–complex is :–
(1) Fermentation
(2) Phosphorylation
(3) Respiration
(4) Packaging of materials for secretion

24. Which cell organelle(s) take(s) part in the formation of lysosomes ?
(1) Endoplasmic reticulum
(2) Golgi bodies
(3) Both 1and 2
(4) Mitochondria

25. A single unit membrane organelle is :-
(1) Ribosome (2) Mitochondria
(3) Chloroplast (4) Lysosome

26. Cisternae are found -
(1) Only in mitochondria
(2) Only in Endoplasmic Reticulum
(3) In Endoplasmic Reticulum and Golgi body
(4) Only in Golgi body

27. Which of the following is the site of lipid synthesis?
(1) Rough ER (2) Smooth ER
(3) Golgi bodies (4) Ribosome

28. Detoxification of lipid soluble drugs and other harmful compounds, in endoplasmic reticulum is carried out by :-
(1) Cytochrome P450
(2) Cytochrome bf
(3) Cytochrome c
(4) Cytochrome a_1–a_3

29. Anthocyanin pigment is found in :–
(1) Chromoplasts (2) Amyloplasts
(3) Cytoplasm (4) Cell sap

30. Golgi body is concerned with :-
(1) Respiration (2) Secretion
(3) Excretion (4) Digestion

EUKARYOTIC CELL (MITOCHONDRIA, PLASTIDS)

31. Power house of cell is :-
(1) Nucleus (2) DNA
(3) Mitochondria (4) ATP

32. Which of the following sets of cell organelles contain DNA ?
(1) Mitochondria, peroxisome
(2) Plasma membrane, ribosome
(3) Mitochondria, chloroplast
(4) Chloroplast, dictyosome

33. Semiautonomous cell organelle is :–
(1) Mitochondria (2) Ribosome
(3) Golgi body (4) Peroxisome

34. Which cell organelle releases oxygen ?
(1) Mitochondria (2) Golgi–body
(3) Chloroplast (4) Ribosome

35. The cell organelles having abundance of oxidizing enzymes is :–
(1) Golgi body
(2) Endoplasmic reticulum
(3) Centrioles
(4) Mitochondria

36. Aerobic respiration is performed by :-
(1) Mitochondria (2) Chloroplast
(3) Ribosome (4) Golgi body

37. Ground substance present inside the mitochondria is called :-
(1) Stroma (2) Matrix
(3) Cell sap (4) Cytoplasm

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38. ATP factories of cells are –
(1) Chloroplast (2) Mitochondria
(3) Ribosome (4) Nucleus

39. Cristae are found in :-
(1) Surface of grana
(2) Surface of plasma membrane.
(3) Inner Membrane of Mitochondria
(4) Nuclear Membrane

40. Double layered organelles are -
(1) Ribosomes (2) Mitochondria
(3) Lysosomes (4) Centrioles

41. Chlorophyll in chloroplasts is located in –
(1) Grana and stroma thylakoids
(2) Only in stroma thylakoids
(3) Stroma
(4) Both grana and stroma

42. Elaioplasts are absent in :-
(1) ***Solanum tuberosum*** (Potato)
(2) ***Cocos nucifera*** (Coconut)
(3) ***Arachis hypogea*** (Ground nut)
(4) ***Helianthus annuus*** (Sunflower)

43. In higher plants, the chloroplasts are :-
(1) Discoidal or oval
(2) Spiral
(3) Cup shaped
(4) Reticulate

44. Mitochondria and chloroplast are considered to be endosymbionts of cell because they :–
(1) Possess their own nucleic acid
(2) Have capacity of ATP synthesis
(3) Do not reproduce
(4) All the above

45. Non pigmented part of chloroplast is called :-
(1) Thylakoids (2) Grana
(3) Stroma (4) Lamellae

46. Which of following is not common in chloroplasts & mitochondria ?
(1) Both are present in animal cells
(2) Both contain their own genetic material
(3) Both are present in eukaryotic cells
(4) Both are present in plant cells

EUKARYOTIC CELL (RIBOSOME, CYTOSKELETON, CILIA, FLAGELLA, CENTROSOME AND CENTRIOLE, MICROBODIES)

47. During germination of seeds which cell organelle converts fatty acid into soluble carbohydrate ?
(1) Peroxisome (2) Glyoxysome
(3) Golgi body (4) Lysosome

48. DNA is not found in :–
(1) Nucleus (2) Mitochondria
(3) Chloroplast (4) Ribosome

49. Self duplication does not occur in :–
(1) Mitochondria (2) Centrioles
(3) Chloroplast (4) Ribosome

50. In which of the following tubulin protein is not present?
(1) Plasma membrane
(2) Cilia
(3) Flagella
(4) Microtubules

51. The peroxisomes are associated with the phenomenon of :–
(1) Krebs cycle
(2) Degradation of H_2O
(3) Anaerobic respiration
(4) Photorespiration and degradation of H_2O_2

52. Which of the following termed as highly specialised peroxisomes ?
(1) Glyoxysomes (2) Mitochondria
(3) Golgi body (4) Lysosomes

53. "Palade particles" are :–
(1) Ribosomes
(2) Golgi vesicles
(3) Lysosomes
(4) Peroxisomes

54. Polysome is a chain of :–
(1) Pinosomes (2) Phagosomes
(3) Microsomes (4) Ribosomes

55. Basal body is :-
(1) Centriole like
(2) Plastid like
(3) Ribosome like
(4) Mitochondria like

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56. Prokaryotic ribosomes are 70 S, S refers to:-
(1) Svedberg unit (2) Smallest unit
(3) Smooth (4) Speed

57. Microtubules are composed of :-
(1) Actin protein (2) Myosin protein
(3) Tubulin protein (4) Dynein protein

58. Arrangement of microtubules in centriole is:-
(1) 9 + 2 (2) 2 + 9
(3) 11 + 0 (4) 9 + 0

59. Smallest cell organelle is :-
(1) Lysosome (2) Centrosome
(3) Ribosome (4) Golgibody

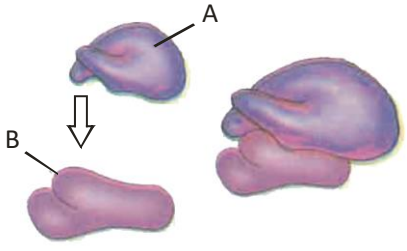
60. 70 S type of ribosomes are found in :-
(1) Prokaryotic cells
(2) Prokaryotic cells, chloroplasts and mitochondria
(3) Mitochondria
(4) Nucleus, mitochondria

61. The Ribosomes are made up of -
(1) DNA + Protein (2) RNA + Protein
(3) DNA + RNA (4) Only protein

62. Cilia and flagella both -
(1) have 9 + 2 arrangement of microtubules
(2) are protective structure of cells
(3) are only present in protozoa animals
(4) are outgrowth structures of cytoplasm

63. In which one of the following would you expect to find glyoxysomes ?
(1) Endosperm of wheat
(2) Endosperm of castor
(3) Palisade cells in leaf
(4) Root hairs

64. Here 'S' (Svedberg's unit) stands for sedimentation coefficient then what are [A] & [B] for eukaryotic cell.



(1) A – 40S, B – 60S (2) A – 60S, B – 40S
(3) A – 80S, B – 60S (4) A – 40S, B – 80S

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EUKARYOTIC CELL (NUCLEUS, CHROMOSOME)

65. Genome is :-
(1) Part of chromosome
(2) Half part of a chromosome
(3) Total DNA in cell
(4) Total chromosomes in a gamete

66. Nucleolar organizer region is a :-
(1) Primary constriction
(2) Secondary constriction
(3) Tertiary constriction
(4) Centriole

67. Kinetochore is present on :-
(1) Mitochondria
(2) Peroxisome
(3) Chromosome
(4) Flagella

68. Chromosomes are composed of :-
(1) DNA, RNA, Histones, Non histones
(2) DNA and Histones
(3) DNA and RNA
(4) DNA, RNA and Histones

69. Which part of chromosome is concern with ageing of organism?
(1) Centromere (2) Telomere
(3) Kinetochore (4) Satellite

70. The non–sticky chromosomal ends are known as–
(1) Chromatids
(2) Centromeres
(3) Satellites
(4) Telomeres

71. The protein nucleoplasmin occurs on :-
(1) Nuclear pore
(2) Sieve cells
(3) Nucleolus
(4) Hetero chromatin

72. Salivary gland chromosome is concerned with :-
(1) vitellogenesis
(2) formation of ribosomes
(3) lipid synthesis
(4) metamorphosis in some insects

73. Part of chromosome after secondary constriction is called :–
(1) Centromere
(2) Telomere
(3) Satellite
(4) Nucleolar organiser

74. If the centromere is close to chromosome's end and the two arms are unequal then the chromosome is called as :-
(1) Metacentric (2) Submetacentric
(3) Acrocentric (4) Telocentric

75. Hetero-chromatin is :-
(1) Darkly stained part of chromatin
(2) Lightly stained part of cristae
(3) Lightly stained part of grana
(4) Scattered Lobes in cytoplasm

76. Chromosome with centromere at one end, is:-
(1) Metacentric (2) Submetacentric
(3) Telocentric (4) Acrocentric

77. Nucleus is absent in :-
(1) Cell of vascular cambium
(2) Root hair cell
(3) Companion cell
(4) Members of mature sieve tube

78. The telomeres of eukaryotic chromosomes consist of short sequences of –
(1) Cytosine rich repeats
(2) Adenine rich repeats
(3) Guanine rich repeats
(4) Thymine rich repeats

79. Protein synthesis in an animal cell occurs –
(1) On ribosomes present in cytoplasm as well as in mitochondria
(2) On ribosomes present in the nucleolus as well as in cytoplasm
(3) Only on ribosomes attached to the nuclear envelope and endoplasmic reticulum
(4) Only on the ribosomes present in cytosol

EXERCISE-I (Conceptual Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	4	4	2	2	4	1	4	1	2	4	3	4	1	4	1
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	1	4	2	2	2	1	1	4	3	4	3	2	1	4	2
Question	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Answer	3	3	1	3	4	1	2	2	3	2	1	1	1	1	3
Question	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Answer	1	2	4	4	1	4	1	1	4	1	1	3	4	3	2
Question	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Answer	2	1	2	2	4	2	3	1	2	4	1	4	3	3	1
Question	76	77	78	79											
Answer	3	4	3	1											

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Exercise - II (Previous Year Questions) AIPMT/NEET

AIPMT 2007

1. Select the wrong statement from the following:
(1) The chloroplasts are generally much larger than mitochondria
(2) Both chloroplasts and mitochondria contain an inner and an outer membrane
(3) Both chloroplasts and mitochondria have an internal compartment, the thylakoid space bounded by the thylakoid membrane
(4) Both chloroplasts and mitochondria contain DNA

AIPMT 2008

2. Polysome is formed by: -
(1) A ribosome with several subunits
(2) Ribosomes attached to each other in a linear arrangement
(3) Several ribosomes attached to a single mRNA
(4) Many ribosomes attached to a strand of endoplasmic reticulum

3. Vacuole in a plant cell: -
(1) Lacks membrane and contains air
(2) Lacks membrane and contains water and excretory substances
(3) Is membrane-bound and contains storage proteins and lipids
(4) is membrane-bound and contains water and excretory substances

AIPMT 2009

4. Plasmodesmata are: -
(1) Connections between adjacent cells
(2) Lignified cemented layers between cells
(3) Locomotary structures
(4) Membranes connecting the nucleus with plasmalemma

5. Middle lamella is composed mainly of: -
(1) Phosphoglycerides
(2) Hemicellulose
(3) Muramic acid
(4) Calcium pectate

6. Cytoskeleton is made up of: -
(1) Proteinaceous filaments
(2) Calcium carbonate granules
(3) Callose deposits
(4) Cellulosic microfibrils

AIPMT 2010

7. The plasma membrane consists mainly of: -
(1) proteins embedded in a carbohydrate bilayer
(2) phospholipids embedded in a protein bilayer
(3) proteins embedded in a phospholipid bilayer
(4) proteins embedded in a polymer of glucose molecules

8. Which one of the following structures between two adjacent cells is an effective transport pathway?
(1) Plasmalemma
(2) Plasmodesmata
(3) Plastoquinone
(4) Endoplasmic reticulum

9. Which one of the following has its own DNA?
(1) Peroxisome (2) Mitochondria
(3) Dictyosome (4) Lysosome

10. The main arena of various types of activities of a cell is:
(1) Nucleus
(2) Plasma membrane
(3) Mitochondria
(4) Cytoplasm

11. Algae have cell wall made up of:
(1) Cellulose, hemicellulose and pectins
(2) Cellulose, galactans and mannans
(3) Hemicellulose, pectins and proteins
(4) Pectins, cellulose and proteins

12. An elaborate network of filamentous proteinaceous structures presents in the cytoplasm which helps in the maintenance of cell shape is called:
(1) Endosplasmic Reticulum
(2) Plasmalemma
(3) Cytoskeleton
(4) Thylakoid

TG: @Chalnaayaaar

13. Identify the components labelled A, B, C and D in the diagram below from the list (i) to (viii) given with -

Components:

(i) Cristae of mitochondria
(ii) Inner membrane of mitochondria
(iii) Cytoplasm
(iv) Smooth endoplasmic reticulum
(v) Rough endoplasmic reticulum
(vi) Mitochondrial matrix
(vii) Cell vacuole
(viii) Nucleus

The correct component are:

(1) A–(i), B–(iv), C–(viii), D–(vi)
(2) A–(vi) B–(v), C–(iv), D–(vii)
(3) A–(v), B–(i), C–(iii), D–(ii)
(4) A–(v), B–(iv), C–(viii), D–(iii)

AIPMT Pre. 2011

14. Important site for formation of glycoproteins and glycolipids is :-

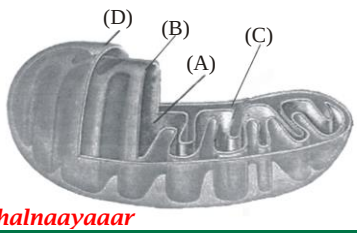
(1) Vacuole (2) Golgi apparatus
(3) Plastid (4) Lysosome

AIPMT Mains 2011

15. Which one of the following is not considered as a part of the endomembrane system?

(1) Lysosome (2) Golgi complex
(3) Peroxisome (4) Vacuole

16. The figure below shows the structure of a mitochondrion with its four parts labelled (A), (B), (C) and (D). Select the part correctly matched with its function.



TG: @Chalnaayaaar

(1) Part (A): Matrix - major site for respiratory chain enzymes
(2) Part (D): Outer membrane - gives rise to inner membrane by splitting
(3) Part (B): Inner membrane - forms infoldings called cristae
(4) Part (C): Cristae - possess single circular DNA molecule and ribosomes

AIPMT Pre. 2012

17. Select the correct statement from the following regarding cell membrane: -

(1) Lipids are arranged in a bilayer with polar heads towards the inner part
(2) Fluid mosaic model of cell membrane was proposed by Singer and Nicolson
(3) Na^+ and K^+ ions move across cell membrane by passive transport
(4) Proteins make up 60 to 70% of the cell membrane

18. What is true about ribosomes?

(1) These are found only in eukaryotic cells
(2) These are self-splicing introns of some RNAs
(3) The prokaryotic ribosomes are 80S where "S" stands for sedimentation coefficient
(4) These are composed of ribonucleic acid and proteins

19. Ribosomal RNA is actively synthesized in:-

(1) Nucleoplasm (2) Ribosomes
(3) Lysosomes (4) Nucleolus

AIPMT Mains 2012

20. Which one of the following cellular parts is correctly described?

(1) Ribosomes - those on chloroplasts are larger (80 S) while those in the cytoplasm are smaller (70 S)
(2) Lysosomes-optimally active at a pH of about 8.5
(3) Thylakoids-flattened membranous sacs forming the grana of chloroplasts
(4) Centrioles - sites for active RNA synthesis

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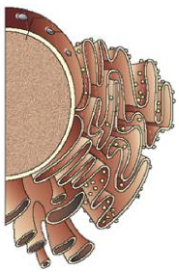
21. Which one of the following structures is an organelle within an organelle?
(1) ER (2) Mesosome
(3) Ribosome (4) Peroxisome

NEET UG 2013

22. The Golgi complex plays a major role:
(1) In post translational modification of proteins and glycosidation of lipids
(2) In trapping the light and transforming it into chemical energy
(3) In digesting proteins and carbohydrates
(4) As energy transferring organelles

23. A major site for synthesis of lipids is:
(1) Nucleoplasm
(2) RER
(3) SER
(4) Symplast

24. Which one of the following organelle in the figure correctly matches with its function?



(1) Rough endoplasmic reticulum, protein synthesis
(2) Rough endoplasmic reticulum, formation of glycoproteins
(3) Golgi apparatus, protein synthesis
(4) Golgi apparatus, formation of glycolipids

AIPMT 2014

25. The solid linear cytoskeletal elements having a diameter of 6 nm and made up of a single type of monomer are known as:
(1) Microtubules
(2) Microfilaments
(3) Intermediate filaments
(4) Lamins

26. Match the following and select the correct answer :

Column-I	Column-II
(a) Centriole	(i) Infoldings in mitochondria
(b) Chlorophyll	(ii) Thylakoids
(c) Cristae	(iii) Nucleic acids
(d) Ribozymes	(iv) Basal body cilia or flagella

(1) (a)–(iv), (b)–(ii), (c)–(i), (d)–(iii)
(2) (a)–(i), (b)–(ii), (c)–(iv), (d)–(iii)
(3) (a)–(i), (b)–(iii), (c)–(ii), (d)–(iv)
(4) (a)–(iv), (b)–(iii), (c)–(i), (d)–(ii)

AIPMT 2015

27. DNA is not present in :-
(1) Ribosomes (2) Nucleus
(3) Mitochondria (4) Chloroplast

28. The structures that are formed by stacking of organized flattened membranous sacs in the chloroplasts are:-
(1) Grana (2) Stroma lamellae
(3) Stroma (4) Cristae

29. The chromosomes in which centromere is situated close to one end are:
(1) Acrocentric (2) Telocentric
(3) Sub-metacentric (4) Metacentric

30. Which one of the following is not an inclusion body found in prokaryotes?
(1) Cyanophycean granule
(2) Glycogen granule
(3) Polysome
(4) Phosphate granule

31. Select the correct matching in the following pairs:
(1) Smooth ER – Synthesis of lipids
(2) Rough ER – Synthesis of glycogen
(3) Rough ER – Oxidation of fatty acids
(4) Smooth ER – Oxidation of phospholipids

RE-AIPMT 2015

32. Which of the following structures is not found in prokaryotic cells?
(1) Plasma membrane
(2) Nuclear envelope
(3) Ribosome
(4) Mesosome

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33. Which of the following are not membrane-bound?
(1) Mesosomes (2) Vacuoles
(3) Ribosomes (4) Lysosomes

34. Cellular organelles with membranes are :
(1) Lysosomes, Golgi apparatus and mitochondria
(2) Nuclei, ribosomes and mitochondria
(3) Chromosomes, ribosomes and endoplasmic reticulum
(4) Endoplasmic reticulum, ribosomes and nuclei

35. Match the columns and identify the correct option:

Column-I	Column-II
(a) Thylakoids	(i) Disc-shaped sacs in Golgi apparatus
(b) Cristae	(ii) Condensed structure of DNA
(c) Cisternae	(iii) Flat membranous sacs in stroma
(d) Chromatin	(iv) Infoldings in mitochondria

(1) (a)–(iii), (b)–(iv), (c)–(ii), (d)–(i)
(2) (a)–(iv), (b)–(iii), (c)–(i), (d)–(ii)
(3) (a)–(iii), (b)–(iv), (c)–(i), (d)–(ii)
(4) (a)–(iii), (b)–(i), (c)–(iv), (d)–(ii)

NEET-I 2016

36. Mitochondria and chloroplast are :-
(a) semi-autonomous organelles
(b) formed by division of pre-existing organelles and they contain DNA but lack protein synthesizing machinery
Which one of the following options is correct?
(1) Both (a) and (b) are correct
(2) (b) is true but (a) is false
(3) (a) is true but (b) is false
(4) Both (a) and (b) are false

37. Microtubules are the constituents of :-
(1) Cilia, Flagella and Peroxisomes
(2) Spindle fibres, Centrioles and Cilia
(3) Centrioles, Spindle fibres and Chromatin
(4) Centrosome, Nucleosome and Centrioles

TG: @Chalnaayaaar

38. A complex of ribosomes attached to a single strand of RNA is known as :-
(1) Polysome (2) Polymer
(3) Polypeptide (4) Okazaki fragment

39. Which one of the following cell organelles is enclosed by a single membrane?
(1) Mitochondria (2) Chloroplasts
(3) Lysosomes (4) Nuclei

40. Water soluble pigments found in plant cell vacuoles are :-
(1) Xanthophylls (2) Chlorophylls
(3) Carotenoids (4) Anthocyanins

NEET-II 2016

41. A cell organelle containing hydrolytic enzymes is:-
(1) Ribosome (2) Mesosome
(3) Lysosome (4) Microsome

NEET 2017

42. Which of the following cell organelles is responsible for extracting energy from carbohydrates to form ATP?
(1) Ribosome (2) Chloroplast
(3) Mitochondrion (4) Lysosome

NEET 2018

43. Which of the following is true for nucleolus?
(1) Larger nucleoli are present in dividing cells.
(2) It is a membrane-bound structure.
(3) It takes part in spindle formation.
(4) It is a site for active ribosomal RNA synthesis.

44. The Golgi complex participates in
(1) Fatty acid breakdown
(2) Formation of secretory vesicles
(3) Respiration in bacteria
(4) Activation of amino acid

45. Which of the following events does *not* occur in rough endoplasmic reticulum?
(1) Protein folding
(2) Protein glycosylation
(3) Cleavage of signal peptide
(4) Phospholipid synthesis

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46. Select the *incorrect* match :
(1) Lampbrush chromosomes – Diplotene bivalents
(2) Allosomes – Sex chromosomes
(3) Submetacentric chromosomes – L-shaped chromosomes
(4) Polytene chromosomes – Oocytes of amphibians

NEET-UG 2019

47. The shorter and longer arms of a submetacentric chromosome are referred to as :-
(1) s-arm and l-arm respectively
(2) p-arm and q-arm respectively
(3) q-arm and p-arm respectively
(4) m-arm and n-arm respectively

48. Which of the following pair of organelles does not contain DNA?
(1) Mitochondria and Lysosomes
(2) Chloroplast and Vacuoles
(3) Lysosomes and Vacuoles
(4) Nuclear envelope and Mitochondria

49. Which of the following statements is not correct?
(1) Lysosomes have numerous hydrolytic enzymes.
(2) The hydrolytic enzymes of lysosomes are active under acidic pH.
(3) Lysosomes are membrane bound structures.
(4) Lysosomes are formed by the process of packaging in the endoplasmic reticulum.

50. The concept of " *Omnis cellula-e cellula*" regarding cell division was first proposed by:
(1) Rudolf Virchow
(2) Theodore Schwann
(3) Schleiden (4) Aristotle

51. Which of the following statements regarding mitochondria is incorrect?
(1) Outer membrane is permeable to monomers of carbohydrates, fats and proteins.
(2) Enzymes of electron transport are embedded in outer membrane.
(3) Inner membrane is convoluted with infoldings.
(4) Mitochondrial matrix contains single circular DNA molecule and ribosomes.

NEET-UG 2019 (Odisha)

52. Which of the following cell organelles is present in the highest number in secretory cells?
(1) Mitochondria
(2) Golgi complex
(3) Endoplasmic reticulum
(4) Lysosomes

53. Non-membranous nucleoplasmic structures in nucleus are the site for active synthesis of:-
(1) Protein synthesis (2) mRNA
(3) rRNA (4) tRNA

54. Match the column-I with column-II :

Column-I	Column-II
(a) Golgi apparatus	(i) Synthesis of protein
(b) Lysosomes	(ii) Trap waste and excretory products
(c) Vacuoles	(iii) Formation of glycoproteins and glycolipids
(d) Ribosomes	(iv) Digesting biomolecules

Choose the right match from options given below :-
(1) (a)–(iii), (b)–(iv), (c)–(ii), (d)–(i)
(2) (a)–(iv), (b)–(iii), (c)–(i), (d)–(ii)
(3) (a)–(iii), (b)–(ii), (c)–(iv), (d)–(i)
(4) (a)–(i), (b)–(ii), (c)–(iv), (d)–(iii)

NEET-UG 2020

55. Which is the important site of formation of glycoproteins and glycolipids in eukaryotic cells
(1) Polysomes
(2) Endoplasmic reticulum
(3) Peroxisomes
(4) Golgi bodies

TG: @Chalnaayaaar

NEET-UG 2021

56. The organelles that are included in the endomembrane system are:
(1) Endoplasmic reticulum, Mitochondria, Ribosomes and Lysosomes
(2) Endoplasmic reticulum, Golgi complex, Lysosomes and Vacuoles
(3) Golgi complex, Mitochondria, Ribosomes and Lysosomes
(4) Golgi complex, Endoplasmic reticulum, Mitochondria and Lysosomes

57. When the centromere is situated in the middle of two equal arms of chromosomes, the chromosome is referred as:
(1) Metacentric (2) Telocentric
(3) Sub-metacentric (4) Acrocentric

58. Match List -I with List - II.

List -I		List -II
(a) Cristae	(i)	Primary constriction in chromosome
(b) Thylakoids	(ii)	Disc-shaped sacs in Golgi apparatus
(c) Centromere	(iii)	Infoldings in mitochondria
(d) Cisternae	(iv)	Flattened membranous sacs in stroma of plastids

Choose the correct answer from the options given below.
(1) (a)–(iv), (b)–(iii), (c)–(ii), (d)–(i)
(2) (a)–(i), (b)–(iv), (c)–(iii), (d)–(ii)
(3) (a)–(iii), (b)–(iv), (c)–(i), (d)–(ii)
(4) (a)–(ii), (b)–(iii), (c)–(iv), (d)–(i)

59. Which of the following is an incorrect statement?
(1) Mature sieve tube elements possess a conspicuous nucleus and usual cytoplasmic organelles.
(2) Microbodies are present both in plant and animal cells.
(3) The perinuclear space forms a barrier between the materials present inside the nucleus and that of the cytoplasm.
(4) Nuclear pores act as passages for proteins and RNA molecules in both directions between nucleus and cytoplasm.

TG: @Chalnaayaaar

NEET-UG 2022

60. Match **List-I** with **List-II**.

	List-I		List-II
(a)	Metacentric	(i)	Centromere situated close to the end forming one extremely short and one very long arms
(b)	Acrocentric chromosome	(ii)	Centromere at the terminal end
(c)	Sub-metacentric	(iii)	Centromere in the middle forming two equal arms of chromosomes
(d)	Telocentric chromosome	(iv)	Centromere slightly away from the middle forming one shorter arm and one longer arm

Choose the **correct answer** from the options given below:
(1) (a)-(i),(b)-(iii),(c)-(ii),(d)-(iv)
(2) (a)-(ii),(b)-(iii),(c)-(iv),(d)-(i)
(3) (a)-(i),(b)-(ii),(c)-(iii),(d)-(iv)
(4) (a)-(iii),(b)-(i),(c)-(iv),(d)-(ii)

61. Which of the following statements with respect to Endoplasmic Reticulum is **incorrect?**
(1) SER is devoid of ribosomes
(2) In prokaryotes only RER are present
(3) SER are the sites for lipid synthesis
(4) RER has ribosomes attached to ER

Re-NEET (UG) 2022

62. Which type of substance would face difficulty to pass through the cell membrane?
(1) Substance with hydrophobic moiety
(2) Substance with hydrophilic moiety
(3) All substance irrespective of hydrophobic and hydrophilic moiety
(4) Substance soluble in lipids

63. If the pH in lysosomes is increased to alkaline, what will be the outcome?
(1) Hydrolytic enzymes will function more efficiently
(2) Hydrolytic enzymes will become inactive
(3) Lysosomal enzymes will be released into the cytoplasm
(4) Lysosomal enzymes will be more active

TG: @Chalnaayaaar

EXERCISE-II (Previous Year Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	3	3	4	1	4	1	3	2	2	4	2	3	4	2	3
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	3	2	4	4	3	3	1	3	1	2	1	1	1	1	3
Question	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Answer	1	2	3	1	3	3	2	1	3	4	3	3	4	2	4
Question	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Answer	4	2	3	4	1	2	2	3	1	4	2	1	3	1	4
Question	61	62	63												
Answer	2	2	2												

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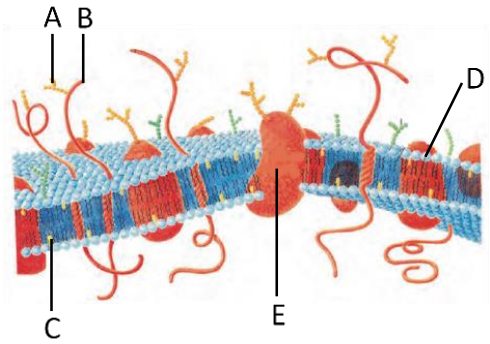
Exercise - III Master Your Understanding

EXERCISE-III(A) NCERT BASED QUESTIONS

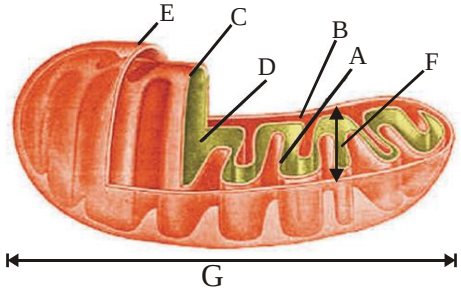
1. The figure given below shows the structure of plasma membrane, with its parts labelled from A to E, Identify the correct :-



(1) A → 52 percent of erythrocyte membrane
(2) B and D → Movement of these can be measured as fluidity of membrane
(3) C → Help in facilitated transport of polar molecules
(4) D → Its polar tail contains saturated hydrocarbons

2. Contractile vacuole :-
(1) is a membrane less structure
(2) is formed by engulfing the food
(3) is important for osmoregulation
(4) is called suicidal bag of cell

Q. No. 3 to 7 are based on given diagram :-



3. Which represents aqueous compartments ?
(1) A, B (2) D, C
(3) A, D (4) B, D

4. What is the average value of labelled F ?
(1) 0.2 µm (2) 0.5 µm
(3) 1.0 µm (4) 4.1 µm

5. Cristae are infoldings of ..... , present toward the .....
(1) E and B (2) B and C
(3) C and D (4) F and D

6. Single, circular DNA molecule is found in :-
(1) B (2) D (3) E (4) C

7. D contains :-
(i) few RNA molecules (ii) 70s ribosome
(iii) Enzymes (iv) Circular DNA
Options :-
(1) ii, iv (2) i, ii, iv
(3) ii, iii, iv (4) i, ii, iii, iv

8. (a) granular structure
(b) first observed under the electron microscope as dense particles by George Palade
(c) composed of RNA and proteins
(d) not surrounded by any membrane
Above given statements are true for which cell organelle?
Options :-
(1) Nucleolus (2) Ribosome
(3) Lysosome (4) Chloroplast

9. Find **incorrect** statement with regard to centrosome and centrioles :-
(a) Centrosome is surrounded by amorphous pericentriolar material
(b) In centrosome, both centrioles lie parallel to each other in which each has an organisation like the cartwheel
(c) Centrioles are made up of nine unevenly spaced peripheral fibrils of tubulin
(d) Hub is the central proteinaceous part of centriole
(e) Proteinaceous radial spokes connect hub to peripheral triplets
Options :-
(1) a, b, e (2) only b
(3) b, c (4) All are correct

10. .....observed that all plant tissues are made up of cells. At the same time....., studied different type of animal cells.
(1) Rudolf Virchow and Robert Brown respectively
(2) Mathias Schleiden and Theodore Schwann respectively
(3) Theodore Schwann and Mathias Schleiden respectively
(4) Robert Hooke and Schleiden respectively

TG: @Chalnaayaaar

TG: @Chalnaayaaar

11. According to fluid-mosaic model, the quasi-fluid nature of.....enables lateral movement of.....within the overall bilayer. This ability to move within the membrane is measured as its...
(i) Carbohydrates (ii) Lipids
(iii) Proteins (iv) Fluidity
(v) Selective permeability
Correct sequence is :-
(1) ii, iii, iv (2) iii, i, iv
(3) iii, ii, v (4) i, ii, iv

12. One of the most important functions of the plasma membrane is :-
(1) Formation of nuclear membrane
(2) Transport of molecules across it
(3) Exocytosis
(4) Detoxification

13. .....can not pass through the lipid bilayer, they require a carrier protein of the membrane to facilitate their transport across the membrane
(1) Nonpolar molecules
(2) Polar molecules
(3) Hydrophobic molecules
(4) Both (2) and (3)

14. Na^+/K^+ pump is an example of :-
(1) Passive transport (2) Osmosis
(3) Active transport (4) Simple diffusion

15. Mark the incorrect match for transport of molecules across the membrane :-
(1) Neutral solute – simple diffusion
(2) Water – osmosis
(3) Non polar molecules – facilitate diffusion
(4) ATP utilized – active transport

16. Mitochondria :-
(a) are easily visible under the microscope (without specifically stained)
(b) are typically sausage-shaped or cylindrical
(c) are double membrane bound structures
(d) have two aqueous compartments
Options :-
(1) a, d correct and b, c incorrect
(2) a, b correct and c,d incorrect
(3) a incorrect and b, c, d correct
(4) a, d incorrect and b, c correct

17. Inner mitochondrial membrane forms infoldings called :-
(1) Thylakoid (2) Cisternae
(3) Oxysomes (4) Cristae

18. The number of mitochondria per cell is variable, depending on :-
(1) Size of cells
(2) Shape of cells
(3) Physiological activity of cells
(4) Type of genes present in mitochondrial DNA

19. Which one of the following is not a component of endomembrane system ?
(a) Endoplasmic reticulum
(b) Golgi body (c) Lysosome
(d) Vacuole (e) Nucleus
Options :-
(1) Both a and c (2) Only c
(3) d and e both (4) Only e

20. Membrane bound vesicular structures formed by the process of packaging in the Golgi apparatus and filled with hydrolytic enzymes, are called :-
(1) Contractile vacuoles (2) Food vacuoles
(3) Lysosomes (4) Centrosome

21. Eukaryotes have 80S, while prokaryotes have 70S ribosomes in cytoplasm. Here "S":-
(a) denotes sedimentation coefficient
(b) is an indirect measure of density
(c) is an indirect measure of size
Options :-
(1) a only (2) a and b only
(3) b and c only (4) a, b and c

22. In r-RNA, ''r'' stands for :-
(1) Reversible (2) Ribozyme
(3) Ribosomal (4) Recognition

23. Interphase nucleus has a loose and indistinct network of nucleoprotein fibres called chromatin, but during different stages of cell division, cells show "*structured chromosomes*" in place of the:-
(1) Nucleus (2) Plastids
(3) Mitochondria (4) Vacuole

24. Nucleus as a "cell organelle" was first described by.....as early as.....
(1) Robert Hooke, 1665
(2) Robert Brown, 1831
(3) Flemming, 1931
(4) Strasburger, 1831

TG: @Chalnaayaaar

25. Space between parallel nuclear membranes is called perinuclear space which is :-
(1) 10–50 nm (2) 0.1 – 0.4 μm
(3) 10 – 50 Å (4) 1 – 4 nm

26. A single human cell has approximately.....long thread of DNA distributed among its....chromosomes:-
(1) 2 cm, 46 (2) 2 metre, 46
(3) 2 cm, 23 (4) 2 metre, 23

27. The physico-chemical approach to study and understand living organisms is called -
(1) Physiochemical biology
(2) Reductionist biology
(3) Fundamental biology
(4) Biochemical biology

28. Regarding to cell membrane find out the odd one -
(1) Fluid mosaic model is widely accepted model
(2) Quasi fluid nature of lipids enables the lateral movement of proteins
(3) All types of molecules can easily pass through membrane
(4) Fluid nature of membrane is also important for cell growth & formation of intercellular junctions

29. Which type of solutes may move across plasma membrane from higher to lower concentration along concentration gradient without help of transmembrane proteins?
(1) Positively charged solutes
(2) Negatively charged solutes
(3) Neutral solutes
(4) Any of the above

30. Select out the wrong statement -
(1) Neutral solute can move according to concentration gradient across the nonpolar lipid bilayer
(2) Water can also move according to concentration gradient across the plasma membrane.
(3) Non polar molecules can not pass through non polar lipid bilayer
(4) Na^+ & K^+ can move across membrane through active transport

TG: @Chalnaayaaar

31. Which of the following is not a function of cell wall ?
(1) Protection from mechanical damage and infection
(2) Cell to cell interaction
(3) Barrier to undesirable macromolecules
(4) Secretion

32. Which of the following components is not a constituent of algal cell wall ?
(1) Cellulose (2) Galactans
(3) Mannans (4) Chitin

33. Endoplasmic reticulum helps in :-
(1) The transport of substances
(2) Synthesis of lipoproteins
(3) Synthesis of glycogen
(4) All of the above

34. Regarding to endoplasmic reticulum which of the following statements are wrong ?
(1) ER divides the intra cellular space into two distinct compartments
(2) RER frequently observed in cells actively involved in secretion
(3) In animals steroidal hormones are synthesized in RER
(4) SER is the major site of lipid synthesis

35. Golgi complex receives proteins for modification from RER at which face ?
(1) Cis face (2) Trans face
(3) Concave face (4) Maturing face

36. Classification of plastids into chloroplast, chromoplast and leucoplast is based on -
(1) Stored food (2) Pigments
(3) Structure (4) Size

37. Chloroplast of higher plants contains -
(1) Only chlorophyll
(2) Only carotenoids
(3) Both chlorophyll and carotenoids
(4) Phycobilin

38. Regarding to cilia and flagella which of the following statements is incorrect ?
(1) Cilia is small and flagella is long
(2) Cilia can move either cell or surrounding fluid
(3) Flagella is responsible for movement of surrounding fluid
(4) Cilia work like oars

TG: @Chalnaayaaar

39. Plasma membrane covers the central core of the flagella and cilia this central core is known as -
(1) Bridge (2) Axoneme
(3) Radial spoke (4) Arms

40. Radial spokes of flagella helps in connection between-
(1) Peripheral triplets
(2) Central singlet microtubules
(3) Peripheral doublet and central sheath
(4) Two successive peripheral doublets

41. Match the following -

(A)	Robert Brown	(I)	Ribonucleo proteins
(B)	Flemming	(II)	Nucleus as cell organelle
(C)	Palade	(III)	Packaging of materials
(D)	Camillo Golgi	(IV)	Staining of nucleus material

Options :-
(1) A - (II) B - (IV) C - (I) D - (III)
(2) A - (II) B - (IV) C - (III) D - (I)
(3) A - (I) B - (II) C - (III) D - (IV)
(4) A - (IV) B - (III) C - (II) D - (I)

42. Classification of chromosomes is based on -
(1) the size of satellite
(2) Number of telomeres
(3) Position of centromere
(4) Position of secondary constriction

43. Chromosome with centromere slightly away from center is known as -
(1) Metacentric (2) Submetacentric
(3) Acrocentric (4) Telocentric

44. Find out the incorrect about secondary constriction -
(1) Non staining
(2) Constant position
(3) Known as satellite
(4) Present in some chromosomes

45. Match the column I and II and choose correct option :-

Column-I		Column-II	
(A)	Plasma membrane	(I)	Helps in cell division of animal cells
(B)	Centriole	(II)	Protein synthesis
(C)	Ribosomes	(III)	Not present in animal cell
(D)	Plastids	(IV)	Rich in hydrolytic enzymes
(E)	Lysosome	(V)	Barrier between cytoplasm and outer environment, in an animal cell.

Options :-
(1) A – V , B – I, C – II, D – III, E – IV
(2) A – V , B – III, C – II, D – I, E – IV
(3) A – IV , B – III, C – II, D – I, E – V
(4) A – II , B – IV, C – III, D – I, E – V

46. Which of the following is not the function of cell wall ?
(i) Provides shape to the cell.
(ii) Protects the cell from mechanical damage and infection.
(iii) Helps in cell to cell connection.
(iv) Provides barrier to undesirable macromolecules.
(v) Helps in cell recognition
Options :-
(1) only (iii) (2) only (iv)
(3) only (ii), (iii) & (v) (4) only (v)

47. (A) Unicellular organisms are capable of independent existence.
(B) Cell is the fundamental structural and functional unit of all unicellular organisms only.
(C) All cells arise from pre-existing cells.
(D) The cytoplasm is the main arena of cellular activities of cells.
Options :-
(1) Statements A, C and D are correct
(2) Statements A, B and D are not correct
(3) Statements A, B and C are correct
(4) Statements B, C and D are not correct

48. Which one of the following statements is not correct for the vacuoles ?
(1) Contractile vacuoles are helpful in excretion
(2) Food vacuoles are formed by engulfing the food particles
(3) Sap vacuole is bound by tonoplast
(4) Tonoplast facilitates the transport of ions against the concentration gradient into cytoplasm

TG: @Chalnaayaaar

49. Which of the following is true for mitochondria?
(A) Mitochondrial ribosome is smaller than prokaryotic ribosome
(B) Single stranded circular DNA is present in matrix
(C) Protein synthesis occurs in Mitochondrial matrix
(D) Outer membrane is highly folded and form cristae
Options :-
(1) A, C and D only (2) A, B and D only
(3) Only C (4) A and D only

EXERCISE-III(B) (ANALYTICAL QUESTIONS)

50. Which of the following are **correct** for the cell which has naked ds circular DNA?
(a) Both 70S and 80S ribosomes
(b) Histone absent
(c) Compartmentalisation of cytoplasm absent
(d) Always diploid
Options :-
(1) a and d (2) b and c
(3) a and c (4) b and d

51. Which of the following is/are function(s) of Golgi complex ?
(I) Modification of lipids and proteins
(II) Detoxification
(III) Formation of acrosome
(IV) Glycogen synthesis & breakdown
Choose the correct option –
(1) I and II are incorrect
(2) I and III are correct
(3) II is incorrect and remaining are correct
(4) II and III are incorrect

52. If living cells, similar to those found on earth, were found on another planet, where there was no oxygen, then which cell organelle would most probably be absent ?
(1) Ribosomes
(2) Golgi apparatus
(3) Mitochondria
(4) Endoplasmic Reticulum

TG: @Chalnaayaaar

53. Plant and prokaryotic cells are similar with each other but differ from animal cells :-
(1) In possessing 70 S ribosomes
(2) In possessing cell wall
(3) In possessing mitochondria
(4) In possessing chloroplasts

54. Ratio of protein and lipid in the membrane of erythrocytes of human being is :-
(1) 1.8 (2) 1.3 (3) 0.80 (4) 0.60

55. A student done the cell fractionation of a tissue and forgot to label his tubes. The content of one tube when studied showed organelles bounded by membrane with activity of catalase enzyme. These organelles could be :-
(1) SER (2) Chloroplast
(3) Lysosome (4) Peroxisome

56. Given below are two statement -
Statement-I :- In plants, the tonoplast facilitates the transport of a number of ions and other materials against concentration gradient into the vacuole.
Statement-II :- Golgi apparatus is the important site of formation of glycoprotein and glycotipids.
In the light of the above statements, choose the correct answer from the options given below -
(1) Both statement I and statement II are correct
(2) Both statement I and statement II are incorrect
(3) Statement I is correct but statement II is incorrect
(4) Statement I is incorrect but statement II is correct

57. **Assertion (A) :** Cell wall is a living rigid structure which form outer covering for the plasma membrane of fungi and plants.
Reason (R) : Secondary cell wall is formed on the outer (towards middle lamella) side of the cell.
(1) Both Assertion and Reason are True and the Reason is a correct explanation of the Assertion.
(2) Both Assertion and Reason are True but Reason is not a correct explanation of the Assertion.
(3) Assertion is True but the Reason is False.
(4) Both Assertion and Reason are False.

TG: @Chalnaayaaar

58. **Assertion (A) :** Chloroplast & Mitochondria are considered as "Semi-autonomous organelle" of the cell.
Reason (R) : Both the organelle possess their own genetic material and have their own protein synthesising machinery.
(1) Both Assertion and Reason are True and the Reason is a correct explanation of the Assertion.
(2) Both Assertion and Reason are True but Reason is not a correct explanation of the Assertion.
(3) Assertion is True but the Reason is False.
(4) Both Assertion and Reason are False.

59. Given below are two statement -
Statement-I :- At number of places the nuclear envelop is interrupted by minute pores.
Statement-II :- Material of the nucleus stained by the acidic dye was given the name chromatin by Fleming.
In the light of the above statements, choose the correct answer from the options given below -
(1) Both statement I and statement II are correct
(2) Both statement I and statement II are incorrect
(3) Statement I is correct but statement II is incorrect
(4) Statement I is incorrect but statement II is correct

60. Read the following statements carefully and select the option which includes incorrect statements -
(a) RER is frequently observed in the cells actively involved in lipid synthesis & secretion.
(b) The SER is the major site for protein synthesis
(c) The golgi cisternae are concentrically arranged near the nucleus.
(d) Lysosomes are rich in alkaline hydrolases.
Option :-
(1) Statement (a), (b) and (c)
(2) Statement (a), (b) and (d)
(3) Statement (b), (c) and (d)
(4) Statement (a), (c) and (d)

Exercise - III ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	2	3	4	2	3	2	4	2	3	2	1	2	2	3	3
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	3	4	3	4	3	4	3	1	2	1	2	2	3	3	3
Question	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Answer	4	4	4	3	1	2	3	3	2	3	1	3	2	3	1
Question	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Answer	4	1	4	3	2	2	3	2	2	4	1	4	1	3	2

TG: @Chalnaayaaar

Important Notes